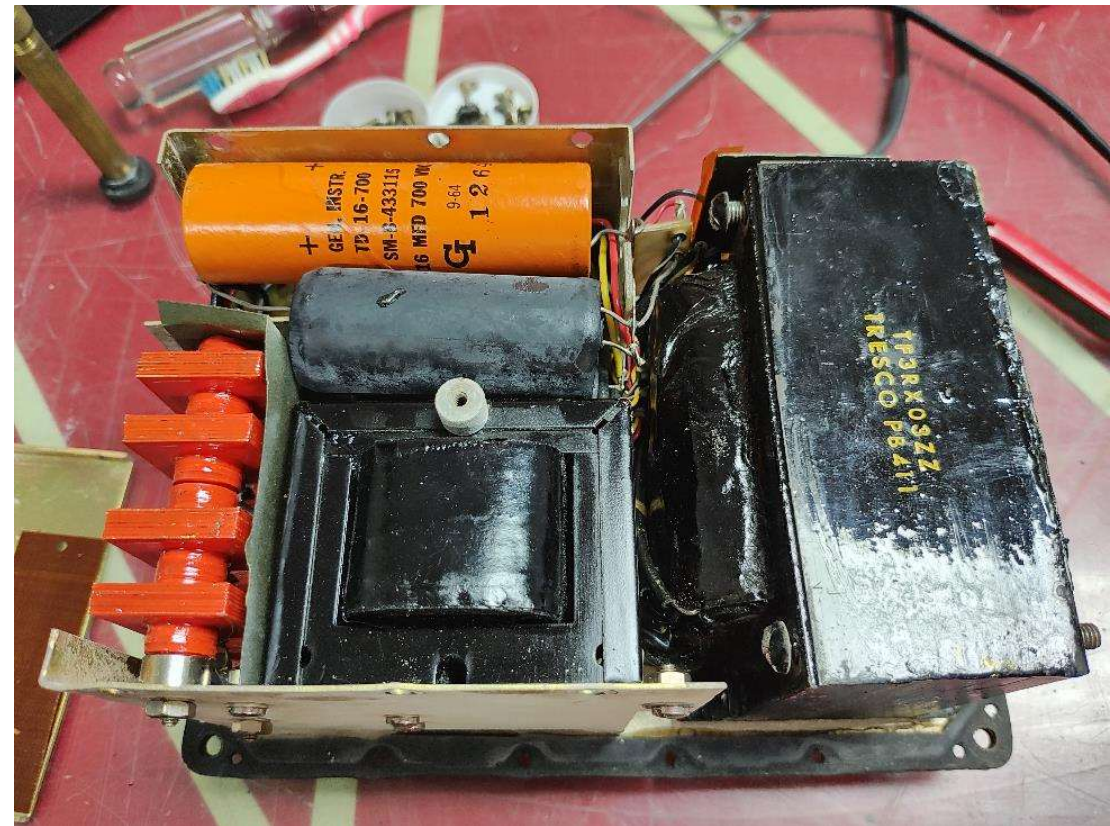
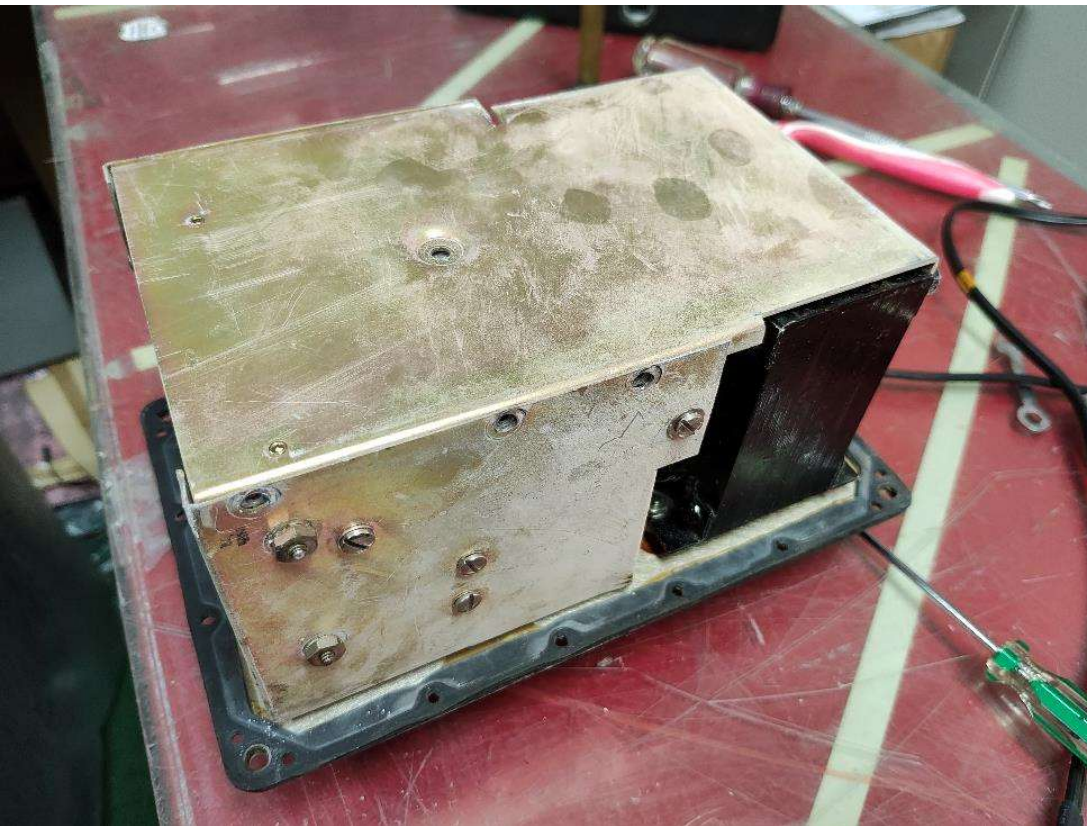


Service Log AN/GRC-109
PP2685 PSU recapping and misc,
18-Nov-2023, Virgil Cheng vr2xgm

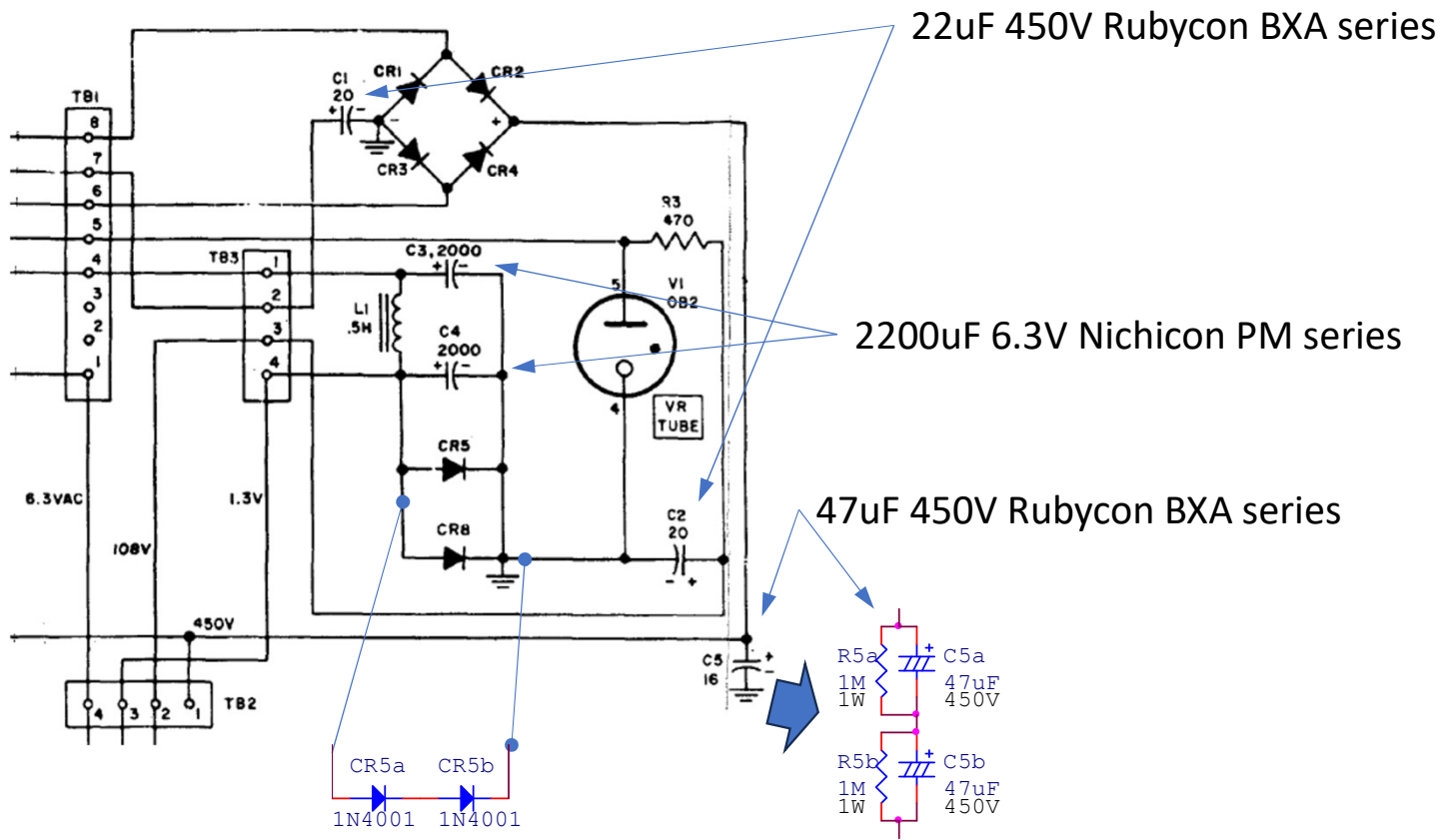
PP2685 recapping and AC meter replacement, 17-Nov-2023

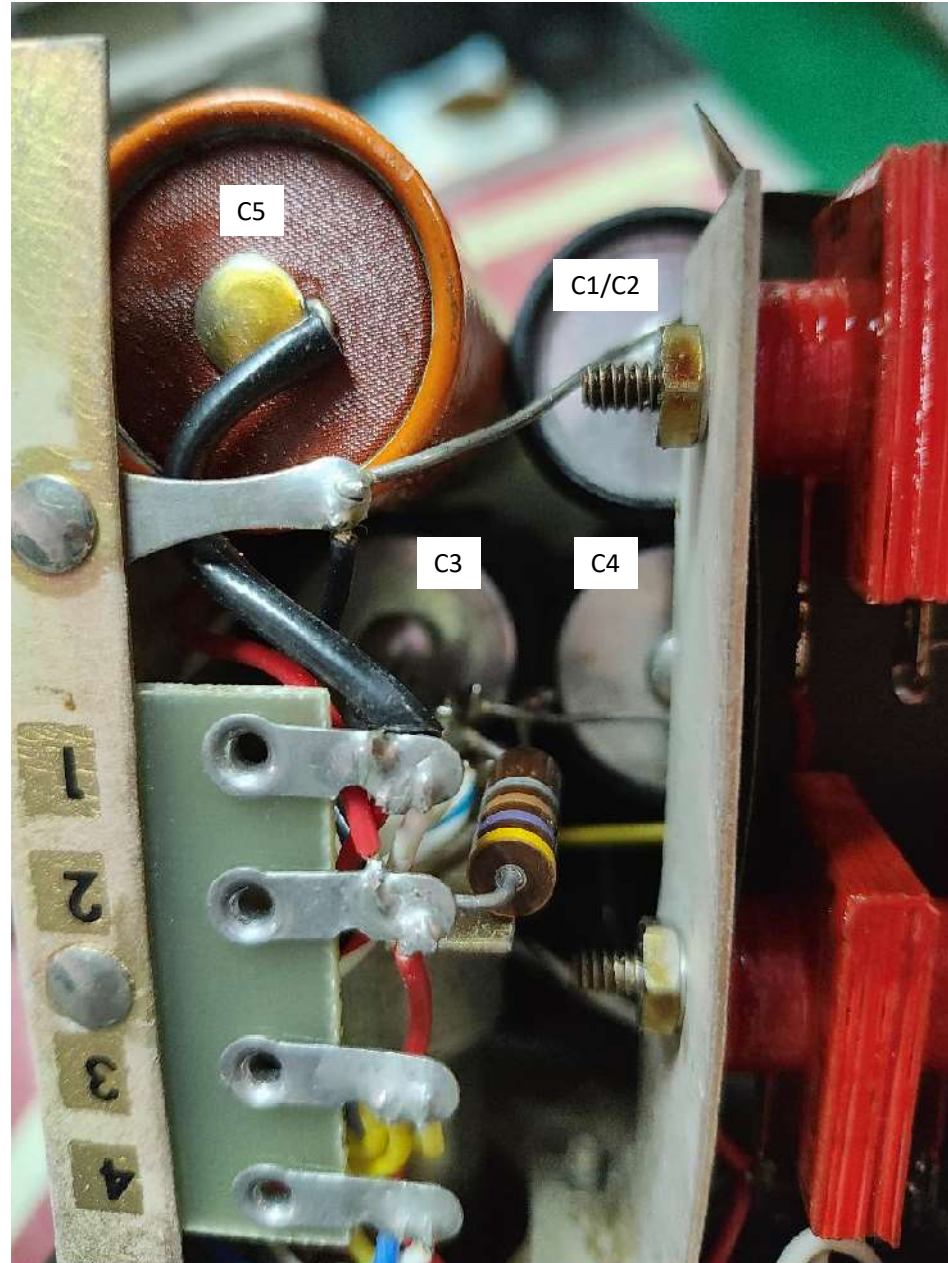
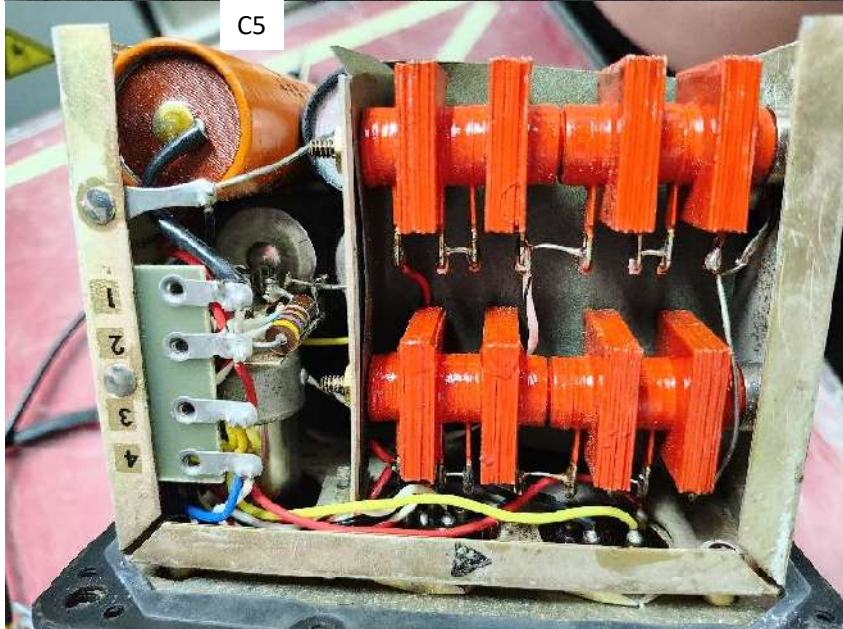
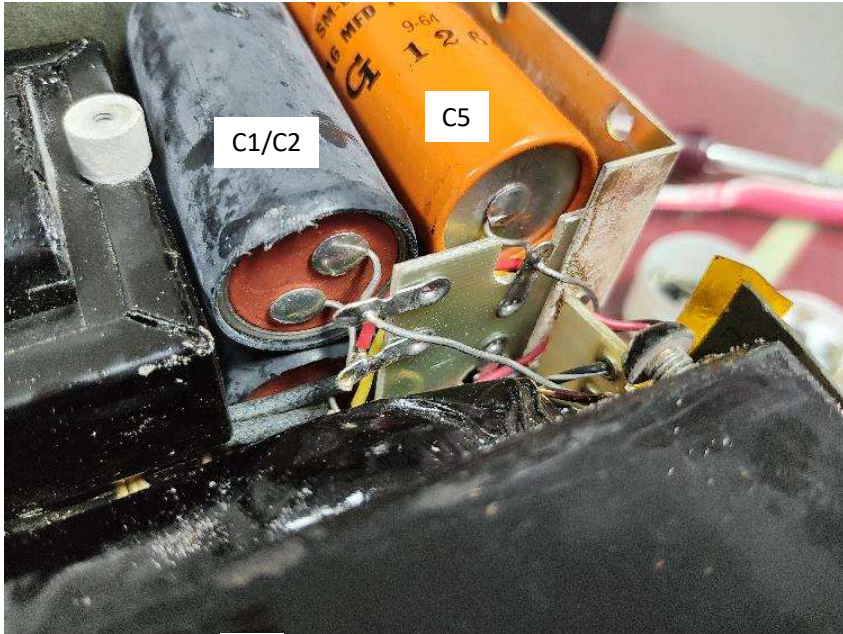
- Unit operational, Oct-2023 opened for routine inspection after receiver tube failure
- Capacitor leaking, 16uF 700V date code 1264, 20uF x 2 450V date code 1264, 2000uF 6V 2pcs date code 1264
- Chassis metal surface stained by evaporated electrolyte, cleaned with Alcohol



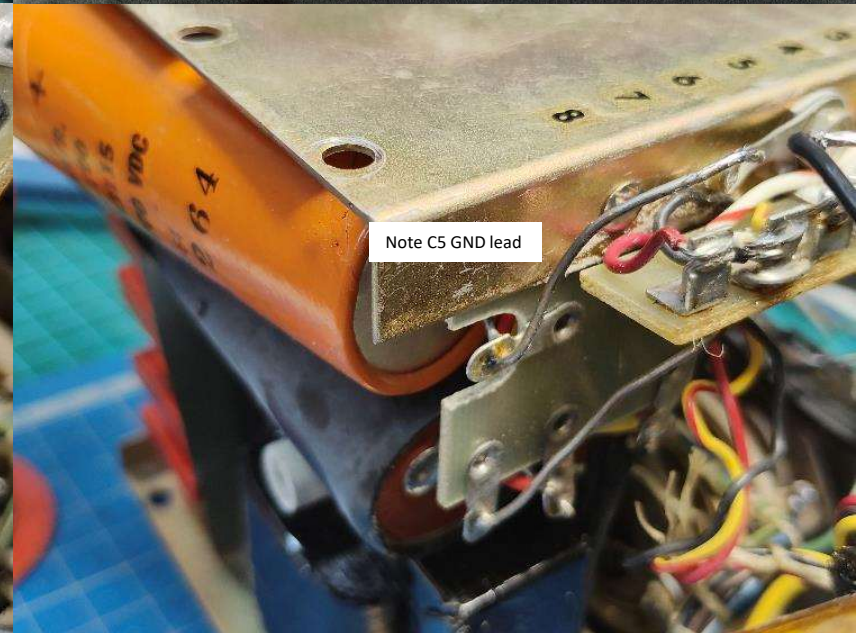
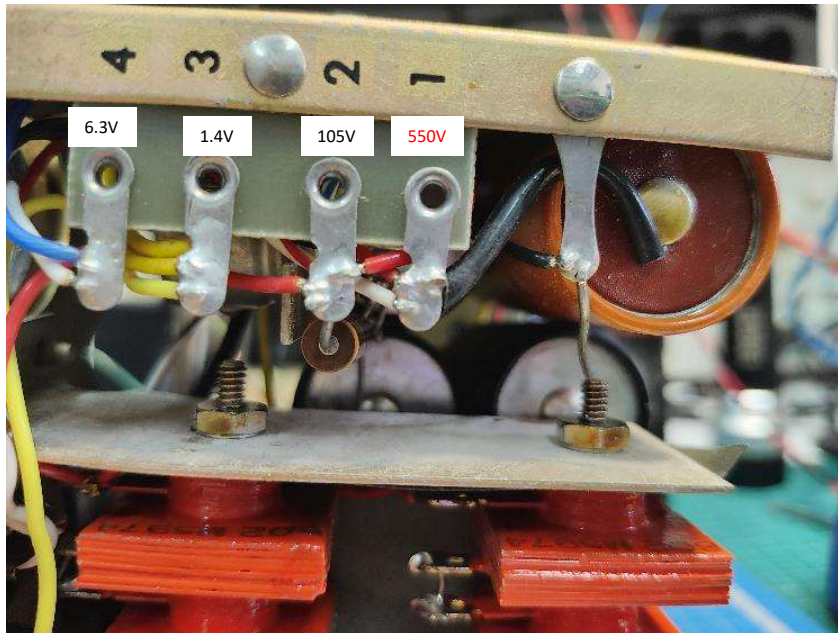
- Repair- Recapping
 - 20uF 450V -> 22uF 450V Rubycon BXA series
 - 16uF 700V -> Two 47uF 450V Rubycon BXA series in series, each paralleled with 1M Ω 1W for voltage equalization
 - 2000uF 6V -> 2200uF 6.3V Nichicon PM series (date code 9845 also old)
- Repair- AC voltmeter replacement:
 - original meter indication higher than normal upon unit arrival, added a 240K resistor in series to correct
 - after almost 20 years meter reads higher voltage, root cause: zero shifted to ~40V mark
 - meter is sealed, unable to adjust unless damaging metal housing
 - original meter or similar unable to find
 - Found China made DH-52 series, plastic housing, not waterproof, 52mm diameter, mounting hole similar
 - mounting holes need modification, additional three holes to be drilled
 - deeper than original, still able to fit with sufficient safety clearance
- Modification- add two series Silicon rectifiers to filament output, improve no-load voltage to 1.6V (was ~2.5V)
 - reduces voltage increase after filament open failure, improve tube filament lifetime, especially expensive 1L6
 - Slightly reduce loaded filament voltage to 1.36V from original 1.4V, can be easily adjusted via R1 in resistor box

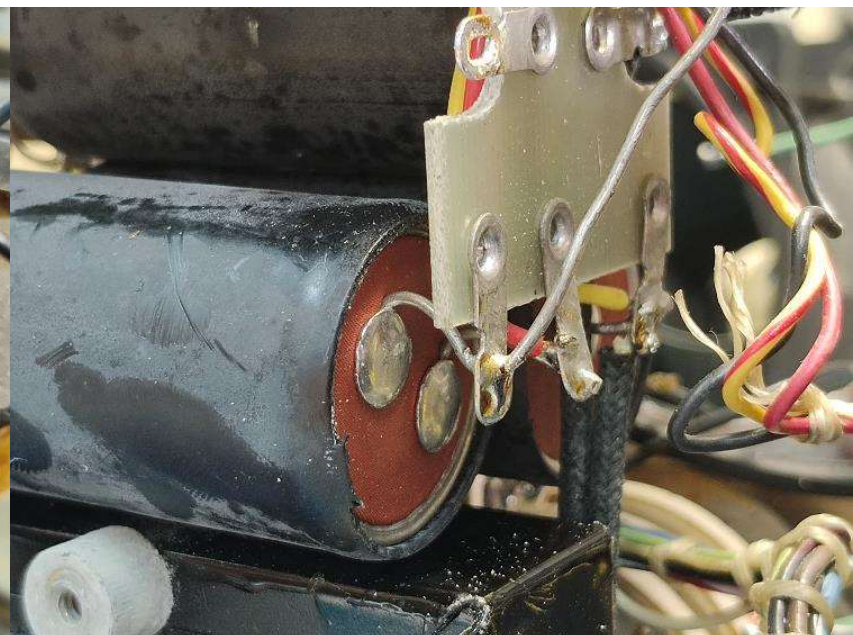
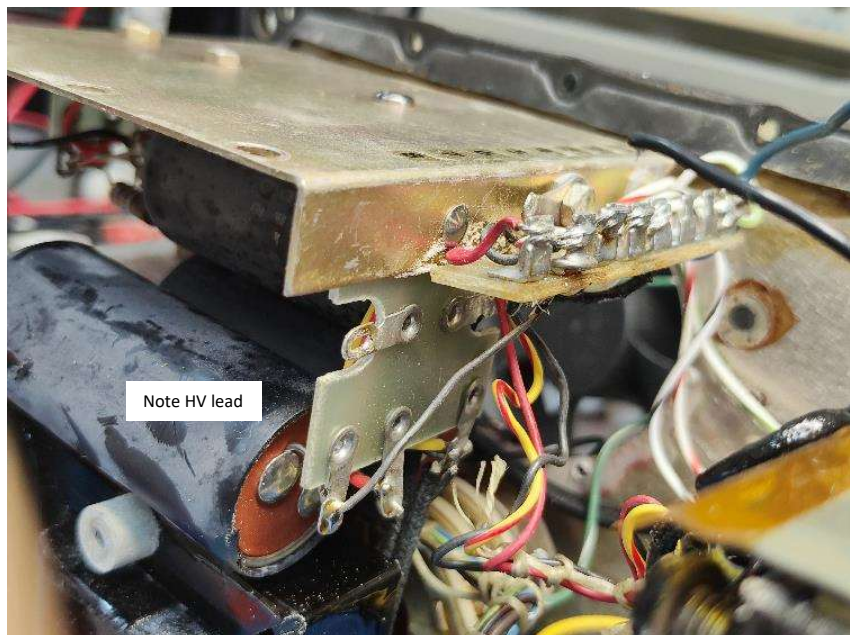
Schematic – components replacement, addition

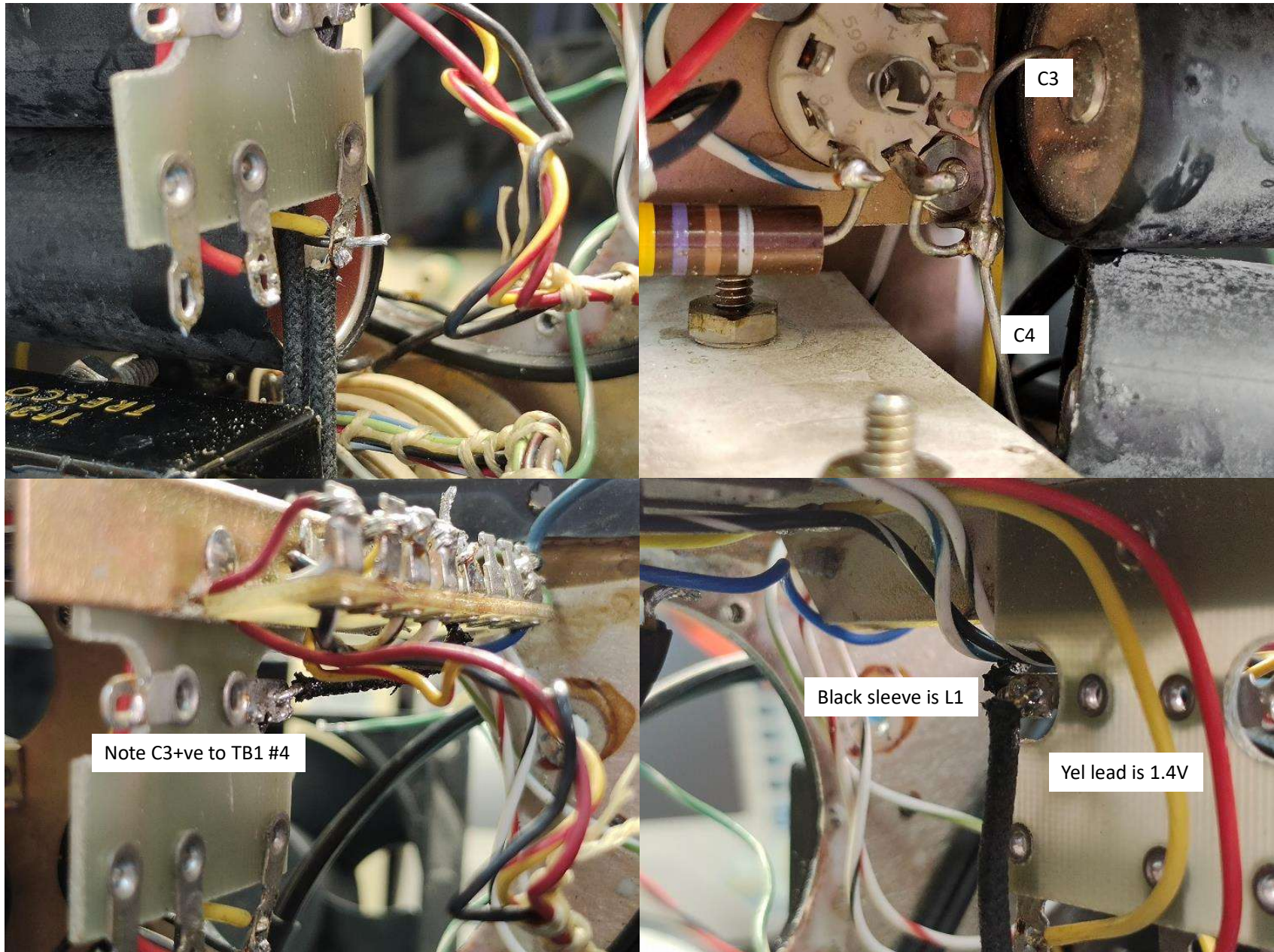




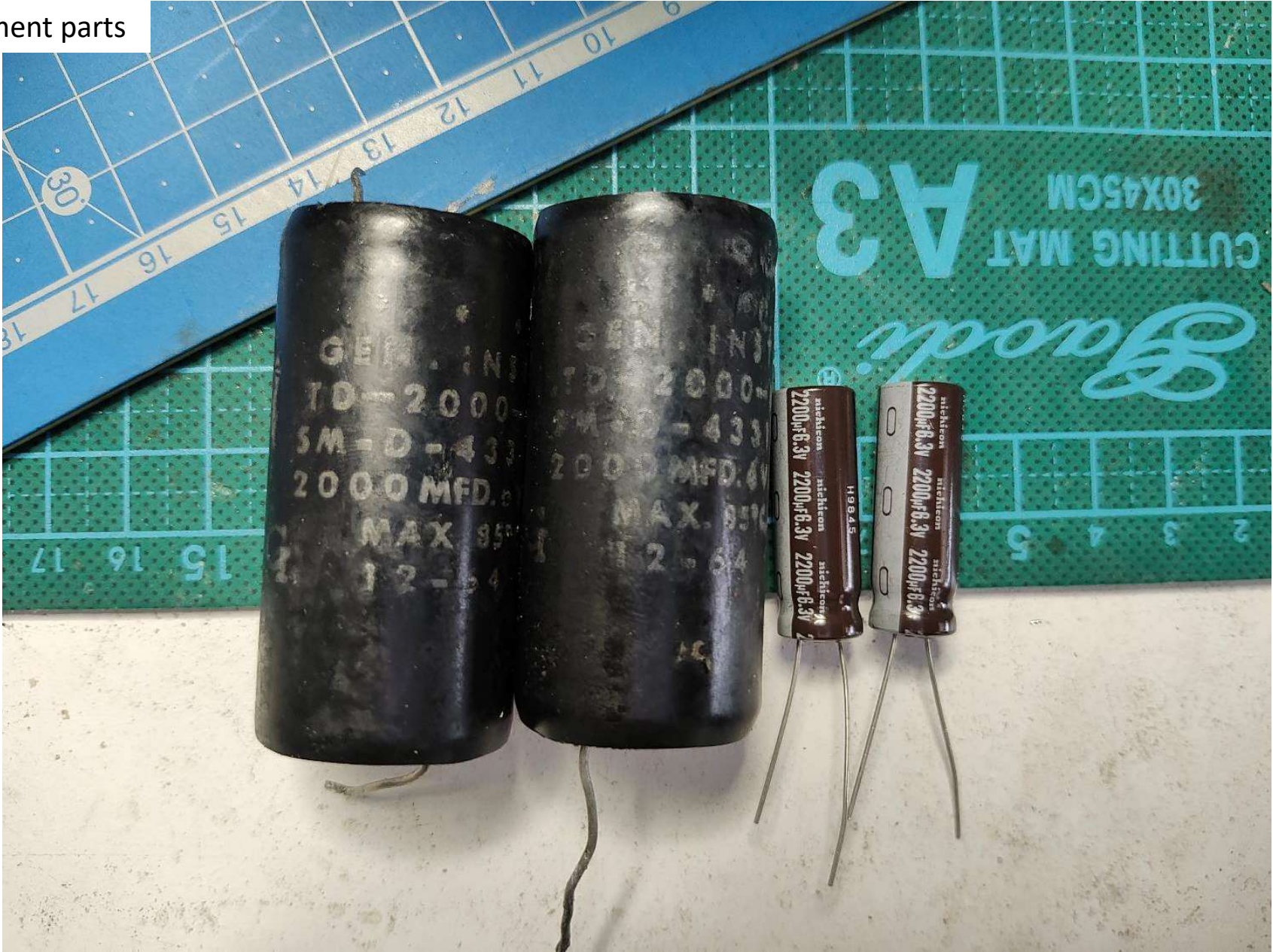
Original capacitor locations



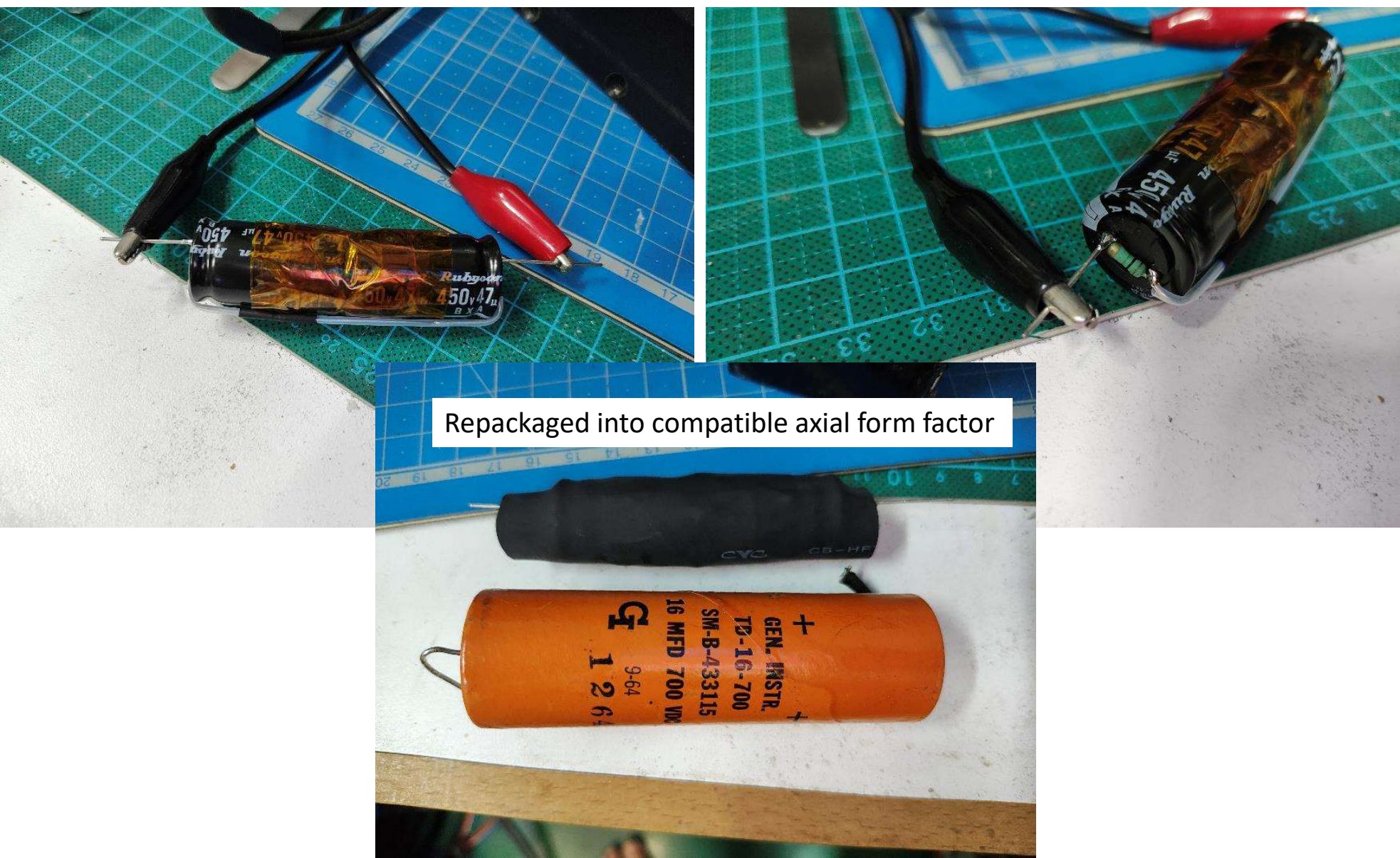




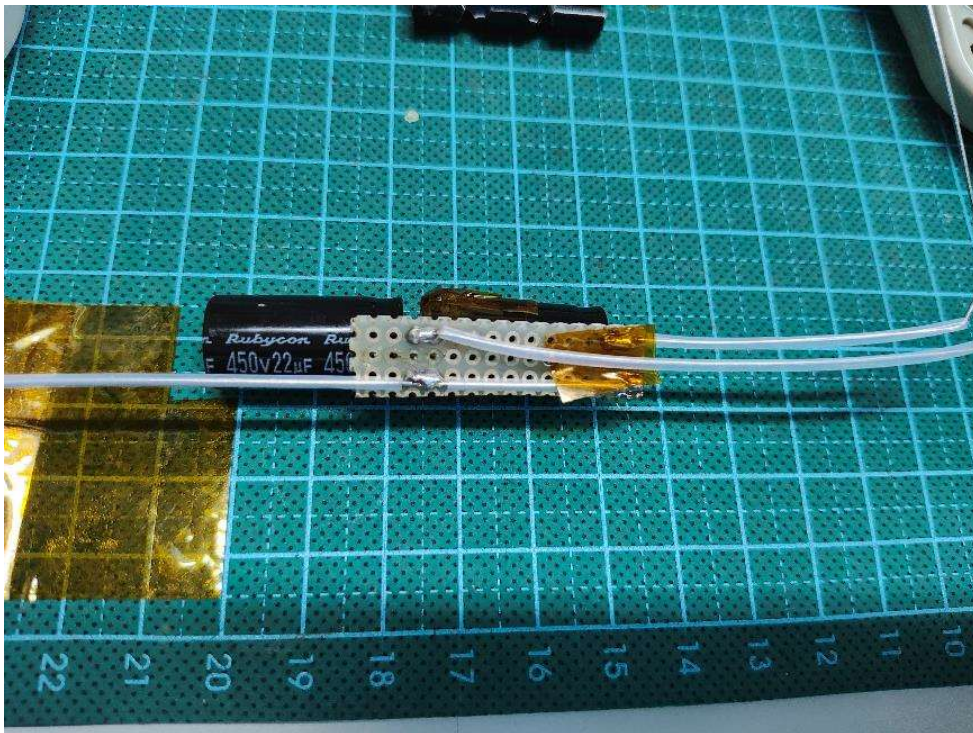
C3/C4 replacement parts

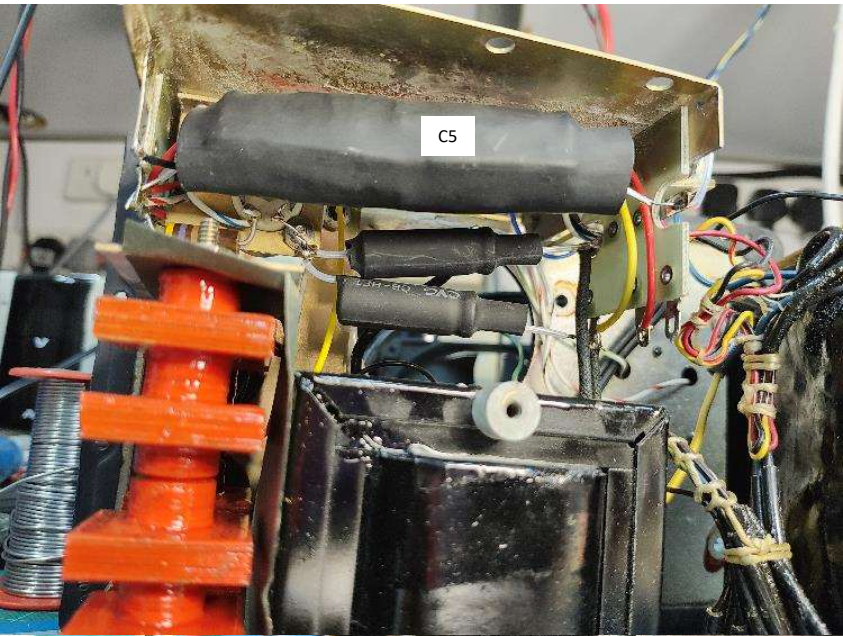
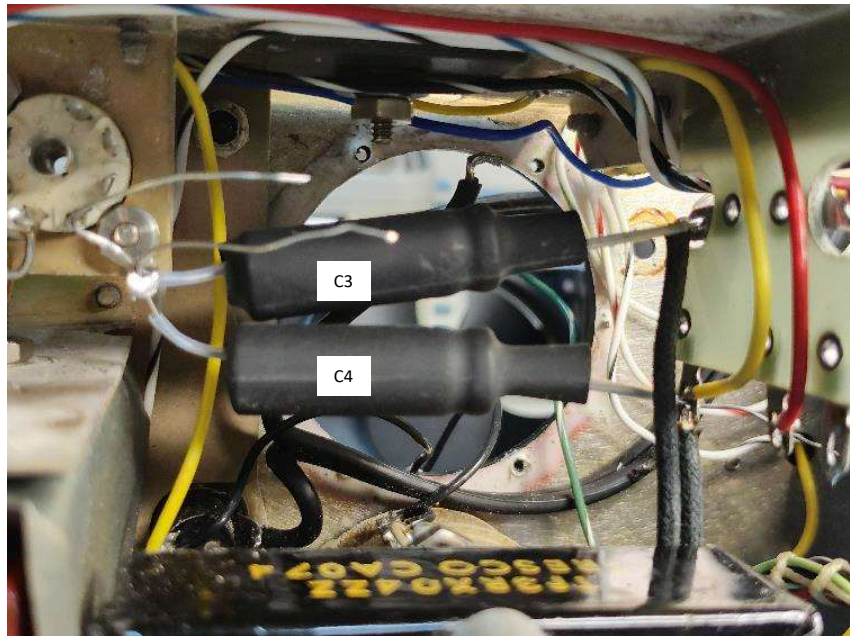


C5 replacement parts, need insulation tape between two cans, capacitor sleeves cannot be treated as reliable insulation



C1/C2 replacement parts, also require insulation between capacitor cans, terminals insulated with Teflon tubes







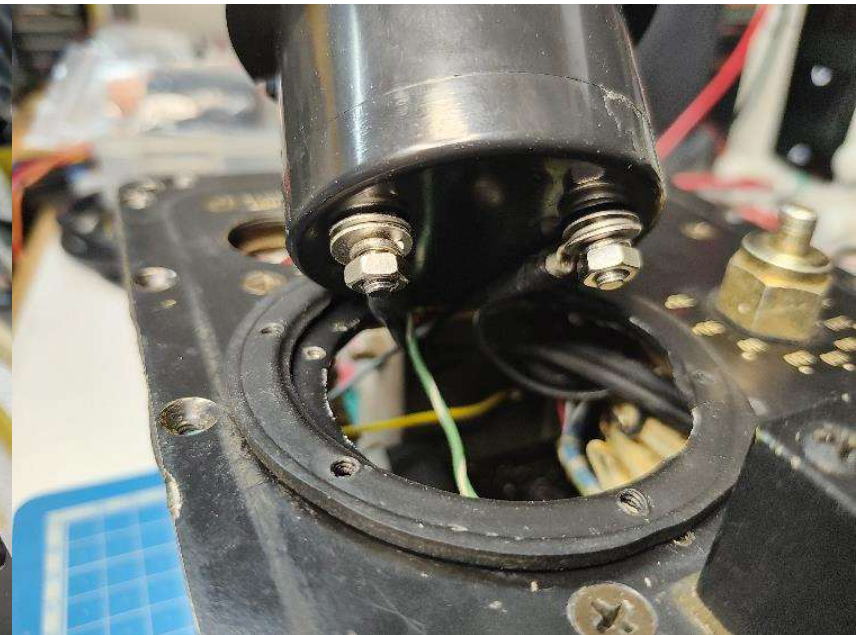
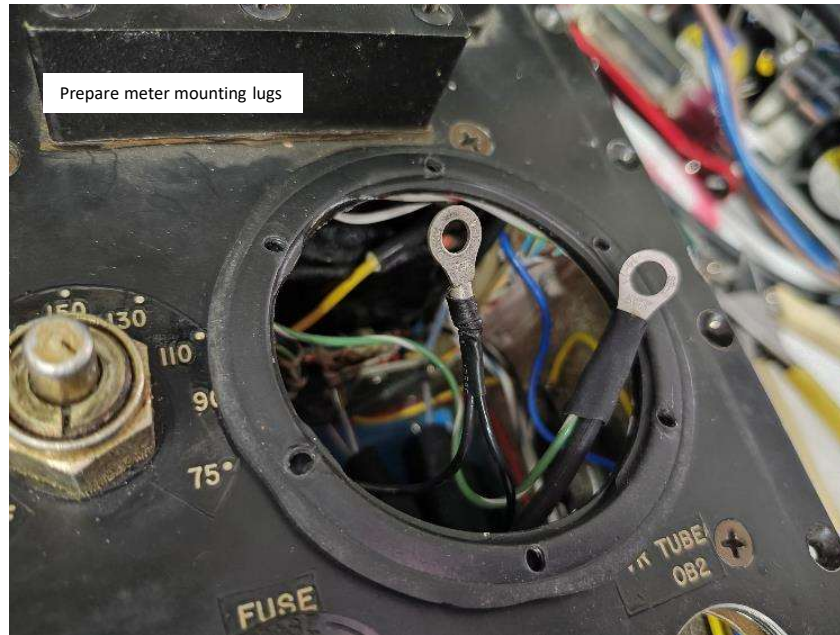
Original meter Silicone sealant was from last repair



Note each meter terminal has two wires with AC input voltage

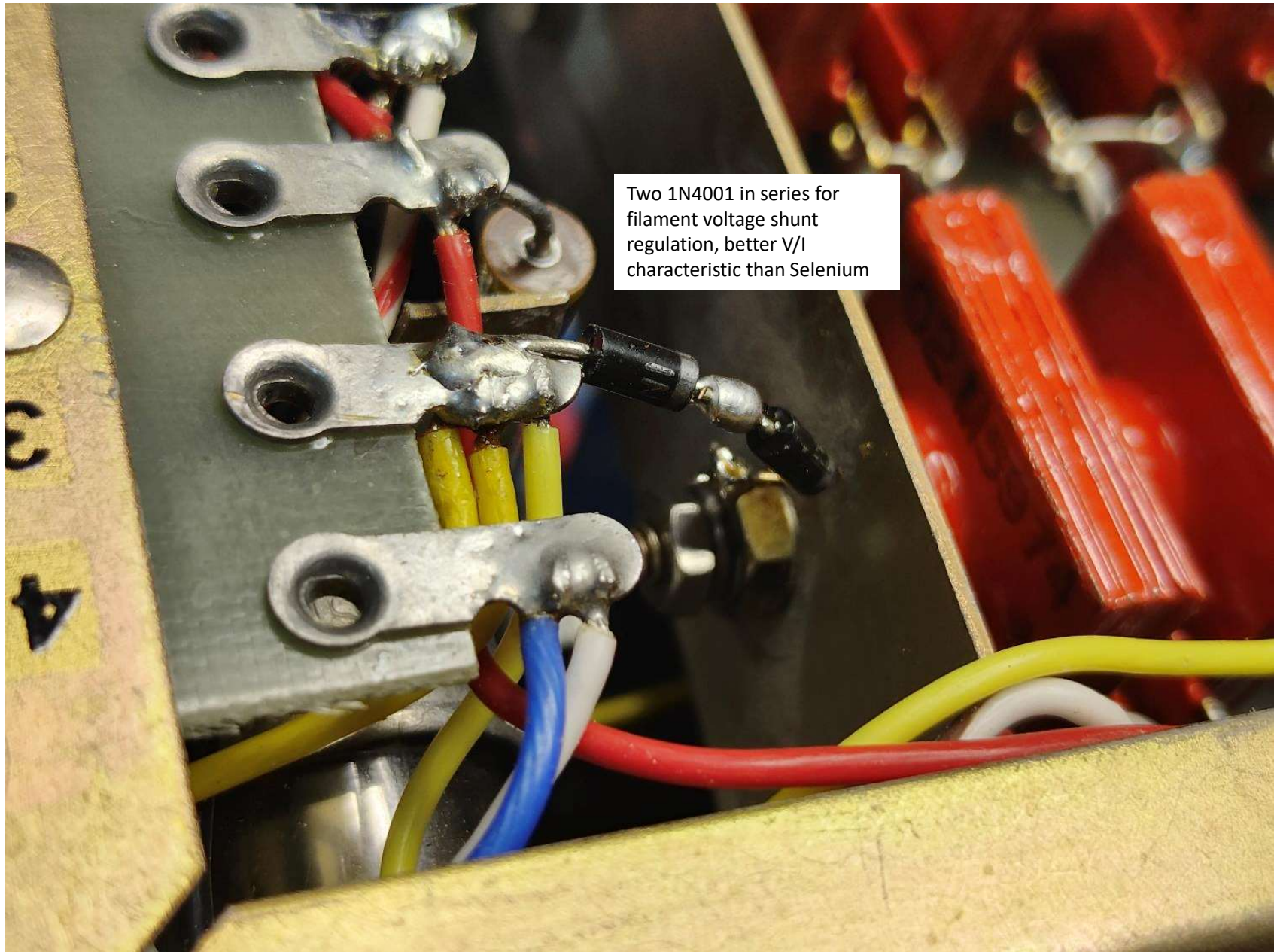


Replacement and original meter





Adding Kapton tape for additional safety



Two 1N4001 in series for
filament voltage shunt
regulation, better V/I
characteristic than Selenium

AC voltmeter disassembly
15-Dec-2023

Before disassembly



Hermetically sealed terminals



Case was welded, cut at weld line

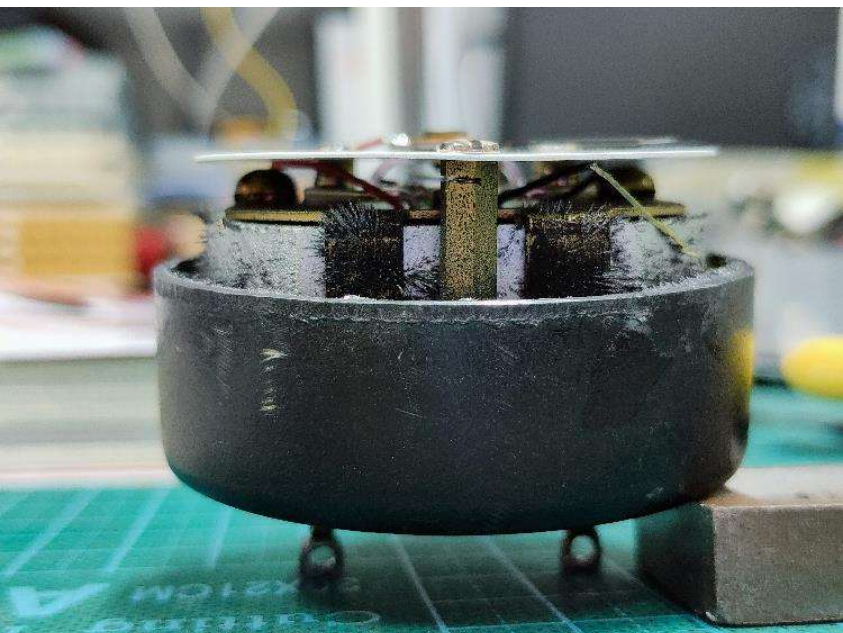


Case separated

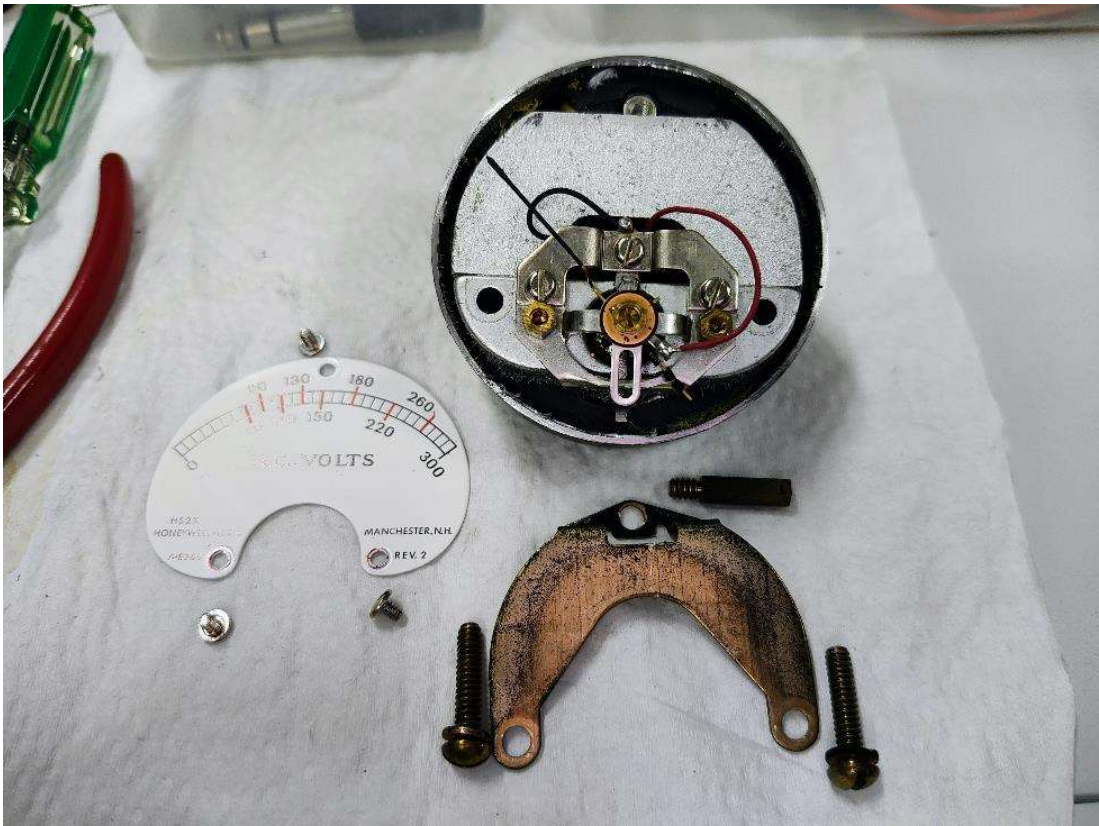
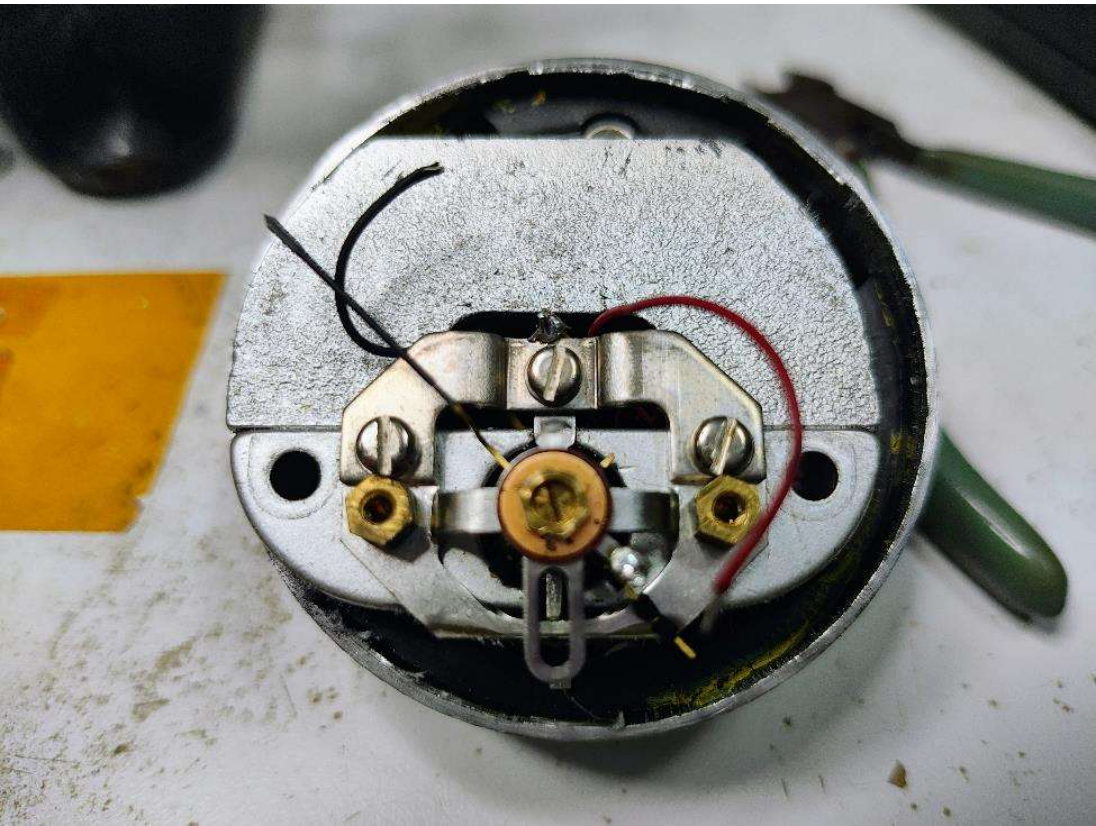


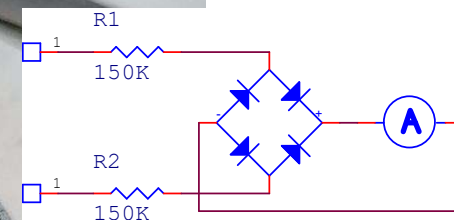
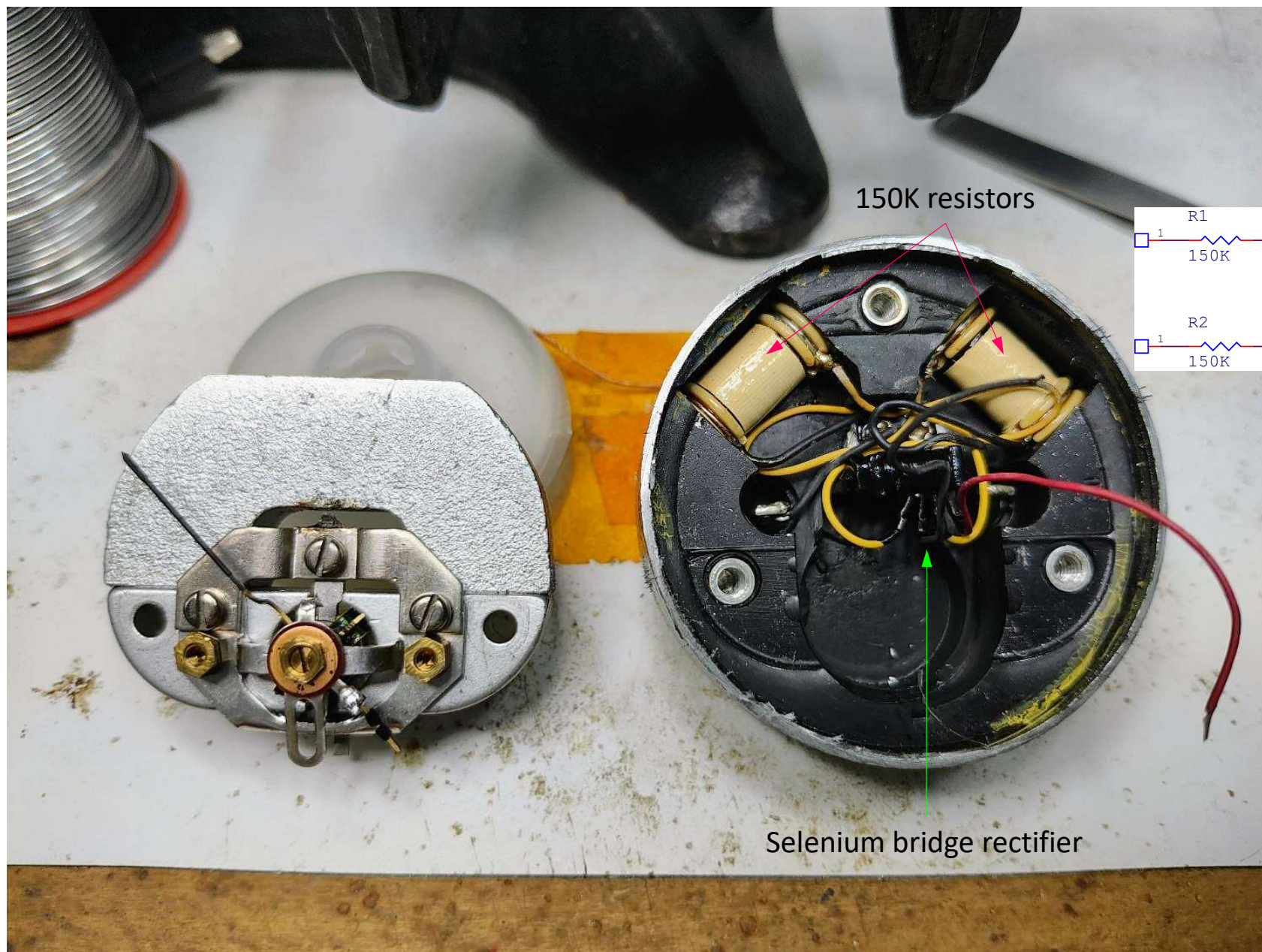


Iron filing is problematic, especially those fell between moving coil and magnet, I used small adhesive tape strips for cleaning



Meter and associated hardware





Meter face artwork, can be printed and attached to new meter face

